DOCUMENT RESUME

ED 261 334 CS 007 956

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TITLE Parental Occupation and Career Aspiration Effects on Vocabulary.
PUB DATE [74]
NOTE 20p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; Career Choice; Educational Research; Elementary Secondary Education; *Occupational Aspiration; *Parent Influence; Parent Role; *Vocabulary Development; Vocabulary Skills
IDENTIFIERS *Parent Occupation

ABSTRACT

A study was conducted to investigate the effects of parental occupation and student career aspiration on vocabulary development. Subjects, 104 seventh grade and 100 eleventh grade students, were shown 10 pictures and asked to write five words in response to each. The words produced were analyzed to determine phonemic, syllabic, and morphemic complexity and statistical probability for appearing in educational materials. In addition, each subject supplied information about parental occupations and their own career aspirations. The results indicated that vocabulary development varied in regard to vocational interest, and that parental occupation was related to child vocabulary development with parents in creative occupations having the highest rank. (EL)

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Parental Occupation and Career Aspiration Effects on Vocabulary

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Beyond general assumptions, little is known about the effects of parental occupation and career aspiration on vocabulary development. Vocabulary acquisition is thought to be a process guided externally by a speech community rather than a result of an internal motivation sustained by a career aspiration. In order to look at vocabulary proficiency with reference to career aspiration and parental occupation words produced by 104 seventh- and 100 eleventh-grade subjects were analyzed to determine phonemic, syllabic, and morphemic complexity and statistical probability for appearing in educational materials. Each subject indicated parental occupation and career aspiration. The Student-Newman-Keuls Test was used to determine if the variations that occurred among subjects with different career aspirations and having parents with different occupations were significantly different at least at the .05 level of confidence.

Parental Occupations and Subject Career Aspirations

Subjects indicated parental occupations by describing their parents' work as belonging to one of the following ten categories:

1. Creative: art, crafts, music, writing, entertainment, photography, communication.
2. Counseling, guidance, social-work and personal service.
3. Business relations and merchandising.
4. Secretarial and clerical.
5. Education and training.

6. Mathematics, science and engineering.
7. Farming, fishing, and forestry.
8. Investigating, inspecting, testing, law, and law enforcement.
9. Machine work and transportation.
10. Medicine and health.

Subjects revealed their career aspirations by checking one of the following:

1. Art.
2. Business relations.
3. Clerical work.
4. Counseling, guidance and social work.
5. Crafts.
6. Education and training.
7. Engineering.
8. Entertainment.
9. Farming, fishing and forestry.
10. Home.
11. Investigating, inspecting and testing.
12. Law and law enforcement.
13. Machine work.
14. Managerial and supervisory work.
15. Mathematics and science.
16. Medicine and health.

17. Merchandising.

18. Music.

19. Personal service.

20. Photography and communication.

21. Transportation.

22. Writing

Pictures and Word Production

Each subject produced fifty words by responding to ten pictures, five words per picture. Eight of the pictures came from A Century of American Illustration (1972), published by the Brooklyn Museum. Among these eight illustrations are caricatures and cartoons that depict pensiveness (The Rat, Paul Davis, 1970), anguish/dejection (School Days, F.X. Leyendecker, 1915), shock (Good-gracious Matilda -- you too?, Theodore Geisel, 1931), captured/ensnared (Vladamir Nabokov, David Levine, 1967), confutation (Dick Gregory Poster, Milton, Glaser, 1969), fright (He jumped up and lashed his tail, Harrison Cady, 1907), imagination (The Photographer and the Model, Ralph Barton, 1930), and rejecting or defending against romantic advance (How to handle wild men and really serious things like that, John Held, Jr., 1929).

One picture was taken from Private Realities: Recent American Photography, (1974), published by the Boston Museum of Fine Arts. It was taken by Cary Wasserman in 1973 and designated as Magnolia No. 1, Pink Rock. It is surrealistic and was included among the

ten for the purpose of stimulating subjects to produce polysyllabic and morphemic words. It is a picture of an oak tree levitating above a pond. A smaller image of the tree hovers over the mountain in the background.

The tenth picture came from Hills of Home Rural Ozarks (1975), photographs by Roger Minick, writings by Bob Minick and drawings and etchings by Leonard Sussman. The photograph is entitled, Two Chairs on Pierce Porch. The photograph can cause one to recall lonely and melanchollic experiences.

Each subject had a photostatic set of these ten pictures. Each set of pictures had the same order. Along with the set of pictures subjects received a single-page-form containing ten five-space sections numbered 1 through 10. Subjects were instructed to write five different words for each picture. They wrote the words for the first picture in the five-space section for this picture and continued this through picture 10.

Analysis of Words

Correct spelling and psychological implications were not considered. If a word like family was spelled famly, it was recorded as though it had been spelled and pronounced according to standard English. If a numeral was an entry, it was analyzed according to its pronunciation. For example, if the numeral 50 was a response, the analysis of it would have been:

Number of phonemes:	5
Number of syllables:	2
Part of speech:	Adjective
Prefix:	0
Root:	1 (fif-)
Derivational suffix:	1 (-ty)
SFI value:	57.4

The SFI value is a statistical probability of a word appearing in educational materials used in grades 3 through 9. This statistic is a result of the American Heritage word frequency study (Carroll, 1971). It is called the Standard Frequency Index (SFI) which predicts the probability of a word appearing in print. The higher the SFI the greater the chance the word will appear in print; the lower the value the less chance the word will appear in print. The SFI for the is 88.6; for apelike, 31.5.

Results

Subject Career Aspiration

No subject chose item 17 (merchandising) as a career goal, meaning there are twenty-one vocational choices for subject career aspirations. In order to determine if a hierarchy emerged among these twenty-one careers with reference to vocabulary development, means for each of the seven categories were inspected: 1) number of phonemes, 2) number of syllables, 3) parts of speech, 4) prefixes, 5) root words or combining forms, 6) derivational

suffixes, and 7) SFI. The data are ordered according to response number rather than picture. That is response one on all ten pictures for each of the seven categories forms a set of data. For each of the twenty-one careers, there are thirty-five different means (5 responses analyzed seven different ways with subjects grouped according to career choice).

Response number was used to organize the data in order to determine if subjects produced words of greater complexity as they went from response one through five for each of the pictures. This focus is a concern in another study of this data.

The thirty-five means derived by analyzing the words produced by each of the twenty-one career groups were looked at to determine how many were in the highest, 3rd, 2nd and lowest quartiles. The following hierarchy emerged.

Career Aspirations	Highest Quartile	3rd Quartile	2nd Quartile	Lowest Quartile
1. Writing	26	4		5
2. Music	26	3	1	5
3. Managerial and supervisory work	25	2	1	7
4. Investigating, inspecting and testing	19	2	1	13
5. Clerical work	10	6	11	8
6. Personal services	9	5	7	14
7. Counseling, guidance and social work	10	2	7	16

Career Aspirations	Highest Quartile	3rd Quartile	2nd Quartile	Lowest Quartile
8. Crafts	9	3	7	16
9. Engineering	8	5	6	16
10. Education and training	7	7	3	18
11. Art	4	6	7	18
12. Medicine and health	3	3	15	14
13. Law and law enforcement	1	1	22	11
14. Machine work	3	2	14	16
15. Farming, fishing and forestry	0	6	14	15
16. Transportation	0	5	14	16
17. Mathematics and science	2	1	14	18
18. Business relations	2	5	8	20
19. Photography and communication	6	0	7	22
20. Home	2	1	10	22
21. Entertainment	0	1	5	29

This hierarchy shows that vocabulary development vary across groups of subjects who differ in career aspirations. A one-way analysis of variance revealed that thirty-two of the thirty-five continuums of twenty-one means contained statistical values that differ significantly at least at the .05 level of confidence. The table, F values for PR>F, presents the data that show how great the means within each continuum differed. In most instances it

can only be concluded that the means on each end of the continuum differed significantly.

F Values PR > F

Response	SFI	Syllables	Phonemes	Speech Parts	Prefix	Root	Suffix
1.	.03	.01	.02	.001	.0001	.04	.05
2.	.01	.01	.02	.003	.1115	.001	.04
3.	.001	.0001	.0001	.002	.0001	.009	.009
4.	.003	.01	.001	.001	.1279	.2062	.02
5.	.001	.0001	.0001	.006	.0106	.0325	.0001

Looking at the means for initial (high), medial (mean in the eleventh position in the continuum), and final (lowest) positions helps reveal a more clear statement of where the different career groups are on the twenty-one mean continuum. In the following scale information, careers are in the same rank as established by quartile frequencies. The first word in the career designation identify the vocations.

Careers	Initial	Medial	Final
Writing	5		1
Music	3	1	
Managerial	11	1	
Investigating	11	2	6
Clerical		1	
Personal		1	
Counseling	4		3

Careers	Initial	Medial	Final
Crafts	1	5	
Engineering		2	
Education		1	
Art		3	
Medicine		1	1
Law		2	
Machine		2	
Farming		3	
Transportation		2	
Mathematics		1	1
Business		1	3
Photography		1	8
Home		2	6
Entertainment		3	6

Variation in positions on the twenty-one mean continuums was greater for high means than that for low means per group. Those aspiring to having an occupation that involves investigating, inspecting and testing produced the greatest variation: 11, 2, 6. Since the number of subjects indicating preferences for careers was not equal for all the vocations, cell size for statistical treatment varied. The harmonic mean of cell sizes was 39.44. The Student-Newman-Keuls Test for all the variables revealed that the initial and final means in thirty-two of the twenty-one mean contin-

uums were significantly different at least at the .05 level of confidence. The three that did not differ significantly are:

F values are in Table: F values PR>F

1. Response 2 - Prefix: F = .115

   Managerial...Mean : 0.200

   Investigating...Mean : 0.00

2. Response 4 - Prefix: F = .1279

   Writing...Mean: 0.1500

   Home...Mean: 0.000

3. Response 4 - Root: F = 0.2062

   Counseling...Mean: 0.6500

   Photography...Mean: 0.3250

Mean continuums having statistical values that differ significantly, as verified by the Student-Newman-Keuls Test, consist, for the most part, of ranges of twenty-one means with only the first and last means differing statistically. The two columns on the following page exemplify these continuums.

The one designated as Variable: Root 1 contains the means for the number of roots in the first response to each of the ten pictures. As can be seen, those subjects indicating an interest in a career of investigating, inspecting and testing produced words having the greatest number of roots. Those who want to do machine work produced words having the fewest number of roots.

The column identified as Variable: Suffix 2 shows the

hierarchy that emerged with reference to the number of suffixes in the words that comprise the second response to the pictures. Those subjects choosing music for a career produce more words having suffixes. Those expressing an interest in photography and communication gave responses having the least number of suffixes.

Variable: Root 1

Careers	Means
Investigating	0.600
Managerial	0.600
Writing	0.550
Music	0.525
Engineering	0.481
Transportation	0.420
Personal service	0.383
Farming	0.328
Business	0.372
Machine work	0.350
Home	0.333
Art	0.333
Education	0.331
Counseling	0.300
Law	0.300

Variable: Suffix 2

Careers	Means
Music	0.475
Personal service	0.433
Engineering	0.409
Writing	0.400
Clerical work	0.350
Education	0.342
Business	0.336
Crafts	0.333
Art	0.316
Managerial	0.300
Investigating	0.300
Home	0.300
Mathematics	0.288
Medicine	0.283
Farming	0.281

Variable: Root 1		Variable: Suffix 2	
Careers	Means	Careers	Means
Clerical work	0.285	Machine work	0.272
Mathematics	0.277	Law	0.254
Crafts	0.266	Transportation	0.245
Entertainment	0.262	Entertainment	0.237
Photography	0.250	Counseling	0.200
Medicine	0.244	Photography	0.100

When subjects' responses were analyzed with reference to career aspiration, mean continuums as verified by the Student-Newman-Keuls Test as having values that were significantly different, evidence emerged which show that vocabulary development does vary in regards to vocational interest. Now, we turn to the question: Is there a difference in vocabulary development among children whose parents have different occupations?

Parental Occupation

The same data analysis used to interpret the vocabulary development for subjects having different career aspirations were used to examine the vocabulary of subjects whose parents have different occupations. Ten occupational categories received the focus of this inquiry. The following hierarchy emerged when the means of thirty-five continuums of ten means each were inspected to determine how many of the values were in the top five and how many were in the lower five for each of the occupational categories.

Occupational Categories for Parents of Subjects

	Upper Five Means	Lower Five Means
Creative: art, crafts, music, writing, entertainment, photography and communications	27	8
Education and training	27	8
Counseling, guidance, social work and personal service	24	11
Medicine and health	19	16
Investigating, inspecting, testing, law and law enforcement	17	18
Business relations and merchandising	14	21
Mathematics, science and engineering	13	22
Farming, fishery and forestry	12	23
Secretarial and clerical	12	23
Machine work and transportation	5	30

The equal entries for farming...and secretarial/clerical were ranked as they are because the five means for farming were higher within the top five than those for the secretarial/clerical category.

The Student-Newman-Keuls Test verified that twelve of thse thirty-five continuums of ten means have values within them that differ significantly at least at the .05 level of confidence. The significant information on these twelve hierarchies are presented

to show that ten of the twelve are based upon responses from subjects who perceived their parents as being creative.

Variable	Initial Career	Mean	Final Career	Mean	F Value
Prefix 1	Education	0.0818	Creative	0.014	.04
Syllable 2	Creative	1.842	Medicine	1.411	.04
Speech Part 2	Creative	1.957	Mathematics	1.531	.04
SFI 3	Creative	51.861	Investigating	55.983	.003
Syllable 3	Creative	1.985	Machine work	1.538	.002
Phoneme 3	Creative	5.442	Machine work	4.402	.0009
Prefix 3	Medicine	0.111	Business	0.036	.04
Root 3	Creative	0.585	Machine work	0.338	.03
Suffix 3	Creative	0.528	Machine work	0.272	.005
SFI 5	Creative	52.227	Medicine	56.632	.009
Syllable 5	Creative	1.857	Secretarial	1.480	.0005
Phoneme 5	Creative	5.042	Machine work	4.308	.0004

With this information before us, it will help appreciate the information that show how many of the mean continuums begin with and end with the data derived from responses given by subjects with parents who pursue different vocations. The data are presented in the hierarchy of parental occupations that emerged. The first word is given for each occupation to identify the career category.

Career	Initial	Final
Creative	16	
Education	8	1
Counseling	4	
Medicine	1	3
Investigating	1	4
Business		1
Mathematics		5
Farming	1	1
Secretarial	4	13
Machine work		7

These data reveal that parental occupation is related to child vocabulary development. The hierarchy of occupations that emerged has entries within the ranks that surprised this researcher. Certainly, the creative parent should be expected to foster vocabulary development because creativity requries a high level of language proficiency in most cases. It is usually assumed careers such as mathematics, science and engineering would be more supportive to vocabulary development than this hierarchy suggests.

This hierarchy indicates that an occupation in education is more supportive to vocabulary development than is aspiring to become an educator. In the parental occupation hierarchy, education has the second highest rank. In the career aspiration

hierarchy, it is in the eleventh rank slot.

With reference to subject career aspiration, it is disturbing that those subjects who aspire to be homemakers only were among those demonstrating less development in vocabulary. This researcher would have never thought that students aspiring to be mathematicians, persons in business, photographers, homemakers and entertainers would demonstrate less vocabulary development than those aspiring to become farmers or truck drivers (transportation).

There are some consistencies between the two hierarchies. Some are:

Career Aspiration	Rank (1-21)	Parental Occupation	Rank (1-10)
Mathematics	17	Mathematics	7
Business relations	18	Business relations	6
Writing	1	Creative	1
Medicine and health	12	Medicine and health	4

Conclusions/Recommendations

The two hierarchies that emerged suggest that vocabulary development is a process affected by career aspiration and parental occupation. How these two interact with other variables was not addressed by this study. Since this study looked at such concrete variables as number of phonemes, syllables, prefixes, roots or combining forms and derivational suffixes as well as

lexical variation in words produced by subjects and had no previous research to guide it, it is more explorational than verifying and confirming. The study is also unique in that it looked at the probability of the words appearing in educational materials. This was a study of productive rather than receptive vocabulary.

In the sense that this study focused on productive vocabulary, it resembles the studies of language acquisition in young children conducted in the 1960's and early 70's. These studies focused on mean lengths of utterances (MLU) and morphemes (Cazden, 1972). Of course, this study looked at more variables than MLU and number of morphemes. The variables studied are concrete enough to sustain scientific research.

Future research should be based upon more equal numbers of subjects in the various career groups in order to avoid the statistical problems unequal cell sizes create. The factor of intelligence should be observed in order to determine what relationship it has to the number of phonemes, syllables, prefixes, combining forms and suffixes as well as lexical variation the words have that subjects produce in response to pictures or objects. The probability factor of words produced appearing in print should also be looked at with reference to intelligence.

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